

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
1 CONGRESS STREET
SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023**

FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO THE WATERS OF THE UNITED STATES.**

NPDES NO: **MA0101648**

DATE OF PUBLIC NOTICE:

NAME AND ADDRESS OF APPLICANT:

**Town of Deerfield
8 Conway Street
South Deerfield, Massachusetts 01373**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**South Deerfield Wastewater Treatment Plant
Route 116
South Deerfield, Massachusetts 01373**

RECEIVING WATER: **Connecticut River (Segment MA34-04)**

CLASSIFICATION: **B (Warm Water Fishery)**

LATITUDE: **42° 28' 03" N**

LONGITUDE: **72° 35' 17" W**

I. Proposed Action, Type of Facility, and Discharge Location

The above named applicant has requested that the U.S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection (MassDEP) reissue its NPDES permit to discharge into the designated receiving water, the Connecticut River. The South Deerfield Wastewater Treatment Plant (WWTP) is a 0.85 million gallons per day (MGD) extended aeration, secondary treatment plant serving a population of 2,600. The treatment facility's one significant industrial user, Oxford Foods, ceased operations on September 12, 2006. Presently, there are no plans for anyone to use the facility and resume discharging to the WWTP. Sludge disposal is contracted out and the sludge is incinerated offsite.

The separate wastewater collection system has been subject to excessive infiltration and inflow (I/I) in the past. The Town has completed some corrective work to the collection system and is taking steps to address the issue of inflow from private sources.

The location of the treatment facility is shown in Figure 1.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown in Attachment 1.

III. Permit Limitations and Conditions

The effluent limitations of the draft permit and the monitoring requirements may be found in the draft NPDES permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

The Clean Water Act (CWA or the Act) prohibits the discharge of pollutants to waters of the United States without an NPDES permit unless such a discharge is otherwise authorized by the Act. An NPDES permit is used to implement technology based and water quality based effluent limitations as well as other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with statutory and regulatory authorities established pursuant to the Act. The regulations governing the NPDES program are generally found in 40 CFR Parts 122, 124 and 125.

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the Act (see 40 CFR 125 Subpart A). Publicly owned treatment works are required to meet effluent limits based upon the secondary treatment requirements of 40 CFR Part 133.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards, 314 CMR 4.00, include requirements for the regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established. The State will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained.

The permit must also limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is, or may be, discharged at a level that caused, or has reasonable potential to cause, or contributes to an excursion above any water quality criterion

[40 CFR §122.44(d)(1)]. An excursion occurs if the projected or actual instream concentrations exceed the applicable criterion. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the species to toxicity and, where appropriate, the dilution of the effluent in the receiving water.

Also note that according to Section 402 (o) of the Clean Water Act and EPA regulation 40 CFR § 122.44(l), when a permit is reissued, effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit, except under certain specific conditions. In addition, in accordance with regulations found at 40 CFR Section 131.12, MassDEP has developed and adopted a statewide antidegradation policy to maintain and protect existing in-stream water quality. The Massachusetts Antidegradation Provisions are found at Title 314 CMR 4.04. No lowering of water quality is allowed, except in accordance with the antidegradation provisions.

The limits in the draft permit are based on information in the application, the existing permit, discharge monitoring reports, and toxicity test results.

Waterbody Classification and Usage

The Connecticut River is classified as a Class B, warm water fishery waterbody. The Massachusetts Surface Water Quality Standards (314 CMR 4.05(3)(b)) state that Class B waters shall have the following designated uses:

“These waters are designated as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.”

The “*Connecticut River Basin 1998 Water Quality Assessment Report*” concludes that aquatic life designated uses in the upper 28.5 miles of this segment are supported; although in “Alert Status”. That report also identifies non-support for fish consumption due to PCB contamination. The report did not assess other uses. The proposed *Massachusetts Year 2006 Integrated List of Waters* 303 (d) list identifies this segment as non-attainment due to priority organics and pathogens. Because priority organics are not discharged from the facility and the discharge consistently achieves its water quality-based fecal coliform limits, we do not believe that the South Deerfield Wastewater Treatment Plant causes or contributes to these non-attainments of water uses.

Flow and Dilution Factor

The existing permitted average daily flow of the facility is 0.85 mgd (1.31 cfs). The 7Q10 flow of the Connecticut River at the point of discharge is shown as 1687 in the 1998 Water Quality Assessment Report. An examination of the data in the *USGS Streamflows* statistics indicates that this 7Q10 flow is still valid and will be used in the calculations for this permit. Therefore the dilution factor for the facility is as follows:

$$\begin{aligned} 7Q10 @ \text{ WWTF discharge} &= 1,687 \text{ cfs} \\ \text{Design flow} &= 0.85 \text{ mgd} = 1.31 \text{ cfs} \end{aligned}$$

$$\begin{aligned} \text{Dilution factor} &= (\text{River 7Q10 @ Discharge} + \text{Design Flow}) \div \text{Design Flow} \\ \text{Dilution Factor} &= (1687 + 1.31) \div 1.31 = 1,289 \end{aligned}$$

BOD and TSS

The secondary treatment requirements for Publicly Owned Treatment Works (40 CFR Part 133) shall be used in establishing this permit's limits. The calculations for the monthly and weekly average BOD and TSS mass limits are:

<u>mass limits</u>	<u>Flow x Concentration x Conversion Factor = lbs/day</u>
30-day average	$0.85 \text{ mgd} \times 30 \text{ mg/l} \times 8.34(\text{lb})(\text{l})/(\text{mg})(\text{gal}) = 213 \text{ lbs/day}$
7-day average	$0.85 \text{ mgd} \times 45 \text{ mg/l} \times 8.34(\text{lb})(\text{l})/(\text{mg})(\text{gal}) = 319 \text{ lbs/day}$

These are the same as in the existing permit and are maintained in the draft permit. The eighty-five percent (85%) removal requirement for BOD and TSS is also based upon the secondary treatment requirements and are retained in this draft permit.

Fecal Coliform, pH and E. coli

Fecal coliform and pH limits are based on water quality considerations and state certification requirements. These limits are designed to achieve the water quality standards for a Class B receiving water. State water quality standards allow for seasonal disinfection provided there are no downstream drinking water intakes or shellfishing areas. Year-round fecal coliform limits are not necessary for this discharge because no public water supplies or shellfishing areas are affected. In addition, chlorine and chlorine compounds resulting from the disinfection process can be extremely toxic to aquatic life. Consequently, the seasonal limit allows for the attainment of the primary and secondary contact recreation uses to when they are most likely to occur and is the same as that in other permitted discharges to the Connecticut River in the area.

Currently, there are proposed revisions to the bacteria criteria of the Massachusetts Water Quality Standards. Several scientific studies have demonstrated that *E. coli* is a better indicator than coliform of potential human health effects of bacteria from certain recreational uses, such as swimming. Consequently, the draft permit contains a monthly reporting requirement for *E. coli* during the same period that fecal coliform sampling is required.

Total Residual Chlorine

Total Residual Chlorine (TRC) water quality criteria are established in the *Quality Criteria for Water 1986* (the Gold Book) and the subsequent 2002 update and have been adopted into the State Water Quality Standards. The instream criteria shall not exceed 11 ug/l for chronic toxicity and 19 ug/l for acute toxicity to protect aquatic life. Allowing for available dilution at the annual monthly average flow, the TRC permit limit calculations based on the dilution factor of 1,289 are shown below.

$$\begin{aligned}\text{Average Monthly Chlorine Limit} &= 11 \text{ ug/l} * 1,289 = 14,179 \text{ ug/l} = 14.2 \text{ mg/l} \\ \text{Daily Maximum Chlorine Limit} &= 19 \text{ ug/l} * 1,289 = 24,491 \text{ ug/l} = 24.5 \text{ mg/l}\end{aligned}$$

However, the Massachusetts Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990) stipulates that the maximum effluent concentration of chlorine shall not exceed 1.0 mg/l for discharges with dilution factors greater than 100. Consequently, the permit sets a maximum daily limit of 1.0 mg/l to be in compliance with that policy. As discussed above, the discharge of chlorine to the receiving water is limited to those months when primary and secondary contact recreational activities may occur.

Metals

Potential metals limits for the South Deerfield WWTP would be calculated using the dilution factor and the hardness of the receiving water, when appropriate. As an example, a copper limit is calculated using the dilution factor of 1,289 and a total recoverable chronic criteria based upon a hardness of 36 mg/l.

$$\text{Chronic copper limit} \quad 3.9 \text{ ug/l} * 1289 = 5,022 \text{ ug/l}$$

Because of the high dilution factor there is no reasonable potential for the discharge of metals to cause or contribute to exceedances of water quality standards.

Nitrogen

The Long Island Sound Comprehensive Conservation and Management Plan (CCMP) identifies excessive discharges of nitrogen from sewage treatment plants as the primary cause of low dissolved oxygen levels in the Sound. This condition is the most serious water quality impairment in the Sound and reduces the viable habitat to support fish. Because the Connecticut River is tributary to Long Island Sound, the EPA has required nitrogen monitoring for facilities discharging to the Connecticut River in Massachusetts. The development of nitrogen loadings of all tributaries to the Sound will be part of the Agency's approach to establish a nitrogen control strategy. Therefore, nitrogen monitoring requirements are maintained as in the current permit.

Whole Effluent Toxicity

The Massachusetts Surface Water Quality Standards require that EPA criteria established

pursuant to Section 304(a)(1) of the Clean Water Act be used as guidance in the interpretation of the following narrative criteria:

“All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife.”

National studies conducted by the Environmental Protection Agency have demonstrated that domestic sources contribute toxic constituents to WWTPs. These constituents include metals, chlorinated solvents and aromatic hydrocarbons among others. The impact of the toxicity of several constituents in a single effluent is accomplished through whole effluent toxicity (WET) testing.

Based on the potential for toxicity and in accordance with EPA regulation and policy, the draft permit includes acute toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784 (July 24, 1985); see also, EPA's Technical Support Document for Water Quality-Based Toxics Control). EPA Region I has developed a toxicity control policy which requires wastewater treatment facilities to perform the toxicity testing in order to meet the state certification requirement. The frequency and type of WET tests depend on the dilution factor and risk factor.

Pursuant to EPA Region 1 policy, and MassDEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters, discharges having a dilution ratio greater than 100:1 require acute toxicity testing two times per year with a $LC_{50} \geq 50\%$. The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants. The WET testing requirements in the draft permit are the same as in the current permit.

V. Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16U.S.C. §1801 et seq. (1998)), EPA is required to consult with the National Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910 (a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans

exist (16 U.S.C. § 1855 (b) (1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

Only Atlantic Salmon (*Salmo salar*) is believed to be present during one or more lifestages within the area which encompasses the discharge site. No “habitat areas of particular concern”, as defined under §600.815(a)(9) of the Magnuson-Stevens Act, have been designated for this site. Although EFH has been designated for this general location, EPA has concluded that the

limits and conditions contained in this draft permit minimize adverse effects to Atlantic Salmon EFH for the following reasons:

- The design flow of the facility is 0.85 mgd and the dilution factor is 1,289;
- The technology-based limits for chlorine are more stringent and protective of aquatic organisms than those based on EPA water quality criteria;
- Acute toxicity tests will be conducted on *Ceriodaphnia dubia* and current results of the toxicity tests are in compliance with the permit limits;
- The permit will prohibit violations of the state water quality standards.

If adverse impacts to EFH are detected as a result of this permit action, NOAA Fisheries will be notified and an EFH consultation will be reinitiated.

VI. Endangered Species Act (ESA)

Under Section 7 of the Endangered Species Act, federal agencies are required to ensure that any action they conduct, authorize, or fund is not likely to jeopardize the continued existence of a federally listed species, or result in the adverse modification of critical habitat. EPA has initiated informal consultation with both NOAA Fisheries and the United State Fish and Wildlife Service (USFWS) concerning listed species under their purviews. Listed species in this general area include shortnose sturgeon (*Acipenser brevirostrom*) for NOAA Fisheries, and dwarf wedgemussel (*Alasimidonta heterdon*), Puritan tiger beetle (*Cincindela puritana*), and bald eagle (*Haliaeetus leucocephalus*) for USFWS.

EPA believes the authorized discharge from this facility is not likely to adversely affect any federally-listed species, or their habitats. This preliminary determination is based on the location of the outfall, and the reasons provided in the EFH discussion (Section VI of this Fact Sheet). EPA is seeking concurrence with this opinion from NOAA Fisheries and USFWS through the informal ESA consultation process.

VII. Sludge

Section 405(d) of the CWA requires that sludge conditions be included in all POTW permits. However, the permittee’s practice of contracting out the sludge disposal is not regulated by the

National Sewage Sludge Program. If the permittee changes to a method of sludge disposal that is regulated, then the permittee must comply with the requirements of 40 CFR Part 503. The draft permit requires the permittee to submit an annual report which supplies the name of the contractor(s) responsible for sludge disposal and the quantity of sludge removed by the contractor(s).

VIII. Pretreatment Program

Because the sole significant industrial user, Oxford Foods, is no longer in business, pretreatment requirements do not need to be included in this draft permit. Should the Town accept wastes from industrial users that contain pollutants likely to cause interference or pass through, the need to implement an EPA-approved pretreatment program will be evaluated by the Region.

IX. State Certification Requirements

EPA may not issue a permit unless the Massachusetts Department of Environmental Protection (MassDEP) certifies that the effluent limitations included in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The MassDEP has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR §124.53 and expects the draft permit will be certified.

X. Comment Period and Procedures the Final Decision

All persons, including applicants, who believe any condition of the permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to the EPA and MassDEP contacts listed below. Any person prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after the public hearing, if held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and to each person who has submitted written comments or requested notice.

XI. EPA and MassDEP Contacts

Additional information concerning the draft permit may be obtained between the hours of 9 am and 5 pm, Monday through Friday from:

Mark Malone (CMP)
Municipal Permits Branch
U.S. EPA
One Congress Street - Suite 1100
Boston, MA 02114-2023
TEL. (617) 918-1619
FAX: (617) 918-2064

email: malone.mark@epa.gov

Paul Hogan
Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, MA 01608
TEL: (508) 767-2796
FAX: (508) 791-4131

email: paul.hogan@state.ma.us

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. EPA